



Training Proposal for:
Shasta Tehama Trinity Joint Community College District
Clean Energy Workforce Training Program (CEWTP)
Agreement Number: ET10-0604

Panel Meeting of: January 29, 2010

ETP Regional Office: **Sacramento**

Analyst: J. Daunt

PROJECT PROFILE

Contract Type:	Retrainee	Industry Sector(s):	Construction
	New Hire		Green Technology
Counties Served:	Shasta, Tehama, Trinity		

Union(s): ☐ Yes ☒ No

FUNDING DETAIL

All funding will be under the American Recovery and Reinvestment Act (ARRA).

Program Costs	Support Costs	Total ETP Funding	In-Kind Contribution
\$128,800	\$8,610	\$137,410	\$77,840

TRAINING PLAN TABLE

Job No.	Job Description (by Contract Type)	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post-Retention Wage
				Class / Lab	CBT		
1	Retrainee	Commercial Skills	35	24-100	0	\$2,224	\$13.63
				Weighted Avg: 80			
2	New Hire	Commercial Skills	35	24-100	0	\$1,702	\$11.16
				Weighted Avg: 80			

Minimum Wage by County (Benchmark Wage): The ETP minimum hourly wage for retrainees is \$13.63 in Shasta, Tehama, and Trinity counties. The ETP minimum hourly wage for new hires is \$11.16 in Shasta, Tehama, and Trinity counties.

Health Benefits: ☒ Yes ☐ No This is employer share of cost for healthcare premiums – medical, dental, vision.

Used to meet the Post-Retention Wage?: ☐ Yes ☐ No ☒ Maybe

Participating employers may use health, dental, and/or vision benefits to meet the Post-Retention Wage.

Wage Range by Occupation	
Occupation Title	Wage Range
Utility Scale Wind Technician (Retrainee)	
Utility Scale Wind Technician (New Hire)	
Photovoltaic Installer (Retrainee)	
Photovoltaic Installer (New Hire)	

INTRODUCTION

Shasta Tehama Trinity Joint Community College District (Tri-County College District) seeks CEWTP funding for training both incumbent (currently employed) and unemployed individuals in a multiple-employer contract (MEC) as outlined below:

Within the Tri-County College District, Shasta College is an accredited California Community College and is a local area government unit operating as a school district. The applicant's representatives state that one of the school's "products" is workforce training and has been for over a decade. The renewable energy program operates at the District's Tehama County location at 900 Palm Street, Red Bluff.

The student body is drawn predominantly from the three-county District, comprised of Shasta, Tehama, and Trinity counties.

Project Profile

The occupational training outlined in this proposal is specifically designed to provide occupational skills in Wind-Generation Technology and Photovoltaic Technology for workers directly involved in the construction industry. Under the Panel's guidelines for CEWTP, the 70% Portfolio Model will be made available for new-hire trainees. The retention period may be 200 hours within 365 days, consistent with the guidelines.

According to the Tri-County College District the Wind Technology program has no certification procedures, as of yet. Currently the training provides skill sets specifically identified by the American Wind Energy Association (AWEA) as important for a Utility Scale Wind Technician.

There is also no certification procedure currently available for the Photovoltaic Technology program. The Tri-County College District has submitted this course of study to the North American Board of Certified Energy Practitioners (NABCEP) for approval. If approved, trainees will be qualified to take the certification test upon completion of the class. However, training cannot begin in this program before the District receives NABCEP certification.

Employer Demand for Training

It is expected that participating employers will be drawn from small businesses engaged in construction trades. Recruitment will be coordinated through the Shasta Builders Exchange, an organization comprised of approximately 850 building and construction contractors located throughout the three counties covered by this training project – Shasta, Tehama, and Trinity.

Tri-County College District works with an Advisory Board consisting of half a dozen employers included in the membership of the Shasta Builders Exchange. This training should allow employers to bid on a wider selection of new projects involving the installation and/or retrofitting of alternate energy sources, for which there is current, growing demand.

Tri-County College District has already begun a four-part training program in this area to deliver eight weeks of training totaling 320 hours, (each of the four parts lasts two weeks). Only the final two weeks (80 hours) will be funded under CEWTP. Tri-County College District representatives state that first three parts (240 hours) will be funded by other sources, including grant moneys. The Tri-County College District representative explained that one session of this four-part training has already occurred, resulting in heightened interest from the tri-county employer community.

All participating employers will be screened for compliance with the Panel's guidelines for eligibility under CEWTP, prior to trainee enrollment.

Location

Training will take place initially at the Red Bluff location only. The applicant states that additional locations may be requested through the revision process during the term of the agreement, should the need arise.

Trainee Recruitment

Tri-County College District maintains an active, comprehensive mailing list which will be used to promote this training program throughout the tri-counties area. The Shasta Builders Exchange will be a primary resource for additional recruitment of trainees, as well as participating employers.

RECOMMENDATION

For the reasons set forth above, staff recommends approval of this proposal.

DEVELOPMENT SERVICES

N/A

ADMINISTRATIVE SERVICES

N/A

TRAINING VENDORS

To Be Determined

Exhibit B: Menu Curriculum

Safety Training cannot exceed 10% of total training hours

Class/Lab Hours

24-100

Trainees will receive any of the following:

Wind-Generation Technology

Commercial Skills

Part 1

- I. OVERVIEW OF WIND-GENERATION TECHNOLOGY
 - A. Alternative energy and present environment and economy
 - B. Wind-generation technology history
 - C. Rebates and tax incentives
- II. WIND TOWER TYPES AND COMPONENTS
 - A. Towers
 - B. Propellers
 - C. Electrical Generators
 - D. Shafts and Bearings
- III. WIND FARM LOCATIONS
 - A. Geographical areas conducive to utilizing wind for energy generation
 - B. Wind Maps
 - C. Topographical considerations
- IV. WIND TURBINE PHYSICS
 - A. Linear force, acceleration, velocity, momentum, energy
 - B. Wind pressure
 - C. Angular velocity, momentum, acceleration, torque, and energy of rotation
 - D. Energy loss through friction
- V. JOBSITE SAFETY
 - A. Safety hazards of wind turbine systems
 - B. Safety equipment

VI. PRINCIPLES AND LOGISTICS OF CRANES AND RIGGING

- A. Center of gravity of crane-load systems
- B. Lever principles as applies to crane-load systems
- C. Wind loading
- D. Blocking, outriggers
- E. Maintaining clearance of power lines
- F. Rigging

VII. MECHANICAL ALIGNMENT, COMPONENTS, AND TOOLS

VIII. BASIC MAINTENANCE AND OPERATION OF A WIND TURBINE

- A. Mechanical theory
- B. Propeller blade pitch and yaw
- C. Drive trains, drive lines, U joints, and transmission
- D. Towers
- E. 3-Phase power line connections
- F. Substations
- G. Generator-Power line setups

Part 2

I. MAP READING

- A. Topographic maps
- B. Wind maps

II. WEATHER FORECASTING

- A. Worker and equipment safety

III. RIGGING AND CRANE TECHNIQUES

IV. ROTOR CONSTRUCTION AND AIRFOILS

V. PLC'S AND CONTROL ALGORITHMS

VI. NON-DESTRUCTIVE MATERIALS TESTING AND TURBINE MAINTENANCE

- A. Scanning electron microscope
- B. Ultrasound
- C. Identification of reflectors, discontinuities, and other imperfections
- D. Pulse echo method
- E. Types of probes
- F. Problem-solving methods
- G. Failure analysis
- H. DGS and DAC methods
- I. Overview of data interpretation
- J. Turbine lifetime and maintenance cost

VII. SCADA AND DATA ANALYSIS

- A. FIBER OPTIC AND CAT-5 NETWORKING

Exhibit B: Menu Curriculum

Safety Training cannot exceed 10% of total training hours

Class/Lab Hours

24-100

Trainees will receive any of the following:

Photovoltaic Technology

Commercial Skills

Part 1

I. OVERVIEW OF PHOTOVOLTAICS

- A. Alternative energy and present environment and economy
- B. Photovoltaic History
- C. Photovoltaic Electric Principles
- D. Net metering laws, rebates, and tax incentives.

II. JOBSITE SAFETY

- A. Safety Hazards of PHOTOVOLTAIC systems
- B. Safety Equipment

III. BASIC ELECTRICAL THEORIES RELATED TO PHOTOVOLTAIC

- A. Conductors, insulators, semiconductors
- B. Polarity
- C. Electrical diagnostic equipment and use of a Multimeter

IV. SOLAR ENERGY FUNDAMENTALS

- A. Preliminary Assessment
- B. Environmental Conditions
- C. Array Requirements
- D. Site shading
- E. Sun path, irradiance, solar day
- F. Solar terms and concepts
- G. Solar south and magnetic south
- H. Solar Pathfinder

V. SITE SURVEYS AND PREPLANNING

- A. Preliminary Assessment
- B. Environmental Conditions
- C. Code compliance

VI. PHOTOVOLTAIC MODULES FUNDAMENTALS

- A. Components of a module
- B. Types of modules, construction techniques
- C. Photovoltaic system layout
- D. Photovoltaic system types
- E. Nominal versus actual output of a module

VII. CELLS, MODULES, ARRAYS

- A. PV cells
- B. Device response
- C. Modules and arrays
- D. Current-Voltage Curve
- E. Watts Law
- F. Solar module efficiency calculations

Part 2

I. BRIEF OVERVIEW OF JOBSITE SAFETY

II. PV SYSTEM HARDWARE, COMPONENTS, AND MECHANICAL INTEGRATION

- A. Inverters
- B. Charge Controllers
- C. Combiner
- D. Disconnects
- E. Batteries
- F. Wires
- G. Labeling and Documentation
- H. Hardware
- I. Mounting Techniques
- J. Roof Mounting
- K. Grid-tied Systems
- L. Stand-Alone Systems

III. PV SYSTEM SIZING BASICS AND SYSTEM COSTING

- A. Sizing Methodologies
- B. System Types
- C. Sizing Calculators
- D. Critical Design Analysis
- E. Component Sizing

IV. ELECTRICAL INTEGRATION

- A. National Electrical Code
- B. Conductors and Wiring Methods
- C. Protection Devices
- D. Disconnects and Grounding

V. PERMITTING AND INSPECTION

- A. Building Codes and Regulations
- B. Permitting
- C. Inspection

VI. COMMISSIONING, MAINTENANCE, TROUBLESHOOTING

- A. Commissioning
- B. Maintenance
- C. Trouble Shooting

Note: Reimbursement for retraining is capped at 100 total training hours per trainee, regardless of delivery method. Reimbursement for new hire training is capped at 260 total training hours per trainee, regardless of delivery method.